

Gasoline Vapor Recovery

Gasoline is volatile and some of it evaporates during storage, giving off hydrocarbon vapor. Formerly, the vapor was vented into the atmosphere but anti-pollution regulations have precluded that practice in many localities, so oil companies and storage terminals are installing systems to recover hydrocarbon vapor. Recovery provides an energy conservation bonus in that most of the vapor can be reconverted to gasoline.

Two such recovery systems are shown in the accompanying photographs (mid-photo at right and in the foreground below). They are actually two models of the same system, although configured differently because they are customized to users' needs. They were developed and are being manufactured by Edwards Engineering Corporation, Pompton Plains, New Jersey. NASA technological information proved useful in development of the equipment.

The Edwards system collects hydrocarbon vapor and channels it through pipes to a condensing unit, a series of refrigerated coils, in which the vapor is converted to liquid. The resulting product, a mixture of water and gasoline, drains into a separator unit, which removes the water and leaves reusable gasoline. The company says that gasoline recovery can pay for the cost of the system in one to two years in cases—such as at dockside where tankers and barges are loaded—involving almost continuous use of the equipment.

In developing the system, Edwards Engineering fabricated some components in its own plant and used commercially available equipment for other parts. One such part was a compressor for the condensing unit, which operates at temperatures of more than 100 degrees below zero Fahrenheit. The compressor posed a major development problem; it had never before operated at such temperatures and lubricating oil froze. After trying several oils without success, Edwards' vice president-engineering learned of a NASA handbook on lubricants. Compiled by Marshall Space Flight Center, the handbook is



a comprehensive consolidation of technical information about commercially available lubricants, their characteristics, specifications and applications. Edwards obtained the handbook and used it to select a suitable low-temperature oil and to find a supplier for the oil. The problem was

solved and Edwards is now producing 15 varying-capacity models of the vapor recovery system. The company has sold 90 units to major oil and chemical companies and is developing a new, smaller model for use at retail gas stations.